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Question sequence effects in the measurement of reciprocity

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Abstract. This article focuses on the methodological problem of sequence effects in the measurement of reciprocity of social support (the balance between giving and receiving of support). It is hypothesized that the likelihood that a relationship is reciprocal will be greater if the pairs of questions on receiving and giving support immediately succeed each other in the interview than if an entire set of questions on receiving support precedes the entire set of reversed questions.

The results of the survey conducted with an experimental design among 179 elderly respondents did not refute this hypothesis; a method effect was observed of an average of about 10% in the expected direction. The method effect was also evident in the results regarding the exchange orientation: under the pairwise condition, no significant associations were observed between exchange orientation and reciprocity, whereas significant associations in the expected direction were observed under the blockwise condition.

It is well documented that receiving support contributes to well-being. However, there are several reasons to assume it is not only the extent to which people receive support that is of importance, but also the extent to which support exchanges are reciprocal. Reciprocity of support is the degree of equality or comparability, within a certain period of time, of the supportive actions performed for and by an individual. A lack of balance, whether it involves more giving or more receiving of support, can be expected to be associated with relatively low levels of well-being (Walster *et al.*, 1978). Clark *et al.* (1986) suggest that the need for reciprocity is determined by the nature of the relationships: reciprocity is more important within relationships with limited objectives than within close and long-lasting relationships. The importance of reciprocity can be viewed in terms of the degree of exchange orientation (Clark & Mills, 1979). People with an exchange orientation keep track of how much support they receive in their relationships in return for what they provide.

When reciprocity of social support is measured, some researchers use one question (for each aspect of support or total support) to allow respondents to compare the support given and the support received. This type of respondent-based comparison was used by Traupmann *et al.* (1981) and Antonucci and Jackson (1989). Antonucci and Jackson (1989, p. 90) asked: "In general, do you feel others have provided more support, is it about equal, or (have) you provided more?" Other researchers measure the support given and the sup-

port received separately, and combine the answers into a reciprocity score. The support exchanges can be determined for each relationship separately or for the network as a whole. Researcher-based reciprocity instruments are based on the following scheme of questions: "aspect of support" \times "receiving/providing support" \times "network member." E.g., "Have you helped [name network member 1] with household chores in the past few months?", "Have you helped [name network member 2] . . .", followed by "Has [name network member 1] helped you with household chores in the last few months?", "Has [name network member 2] helped you . . ." Note that questionnaires based on this scheme force respondents to make three changes in their perspective: between *giving and receiving* support, between different *aspects* of support and between *network members*. Examples of researcher-based reciprocity measurement instruments can be found in the studies by Acitelli and Antonucci (1991), Hancock *et al.* (1988), Lee and Ellithorpe (1982), Roberto and Scott (1984–1985), Rook (1987), and Van Tilburg *et al.* (1991).

In our opinion, separate measures of support received and support given should be used. One important objection to instruments that use direct comparison questions is that the results of the comparison are measured, but no light is shed on the intermediate steps of the providing and receiving exchanges within relationships or on how they can affect each other. In the designing of researcher-based instruments, questions come up that pertain to how these steps are related to the cognitive process the respondent goes through at the time. (However, on the other hand, the disadvantage of researcher-based instruments is that no light is shed on the way giving and receiving support lead to respondent's sense of reciprocity).

In order to determine the extent of reciprocity, the balance between providing and receiving support has to be examined. Erroneous cognitive reconstructions of the providing and receiving of support, such as distortions in the answers to questions about them (Roberto, 1989) or an exaggerated notion of the support one has provided (Thompson & Kelly, 1981) of course bias the reciprocity score. Our general approach to distortions of this kind has been modeled after that of Schwarz and Strack (1991). They stated that in the framework of social cognition theorizing, it is assumed that individuals do not retrieve all the potentially relevant information when they are asked about a topic, but form a judgment on the basis of the subset of information that comes to mind most easily. Schwartz and Strack reported research findings which reflect that a large number of preceding questions increase the accessibility of a more varied set of potentially relevant information, thus reducing the impact of any specific piece of information. Two context effects can be distinguished. If the preceding question concerns the same topic as

the question in progress, the answer on the question in progress reflects the valence of the preceding question. This context effect is termed the *assimilation effect* (Schwarz and Strack, 1991). If the preceding question concerns a different topic, but is related to the same underlying dimension, an answer on the preceding question will serve as a reference point for answering the question in progress. This context effect is termed the *reference effect* (Molenaar, 1982). These two effects can occur at the same time.

If we apply this approach to the questions about providing and receiving support, it is highly probable that context effects will be observed. An assimilation effect might be expected when it comes to questions about the underlying dimension of support with respect to one and the same object, i.e. the relationship with one and the same person. A reference effect can be expected to occur when one relationship serves as a reference point for the evaluation of other relationships.

As regards the assimilation effect, a statement can also be made about the direction of the effect: the answers can be expected to be distorted in the direction of greater reciprocity. It is possible that the answers to the questions about receiving (or giving) support evoke a norm that influences respondents when they answer the questions about giving (or receiving) support. A norm that is likely to guide respondents is the norm of reciprocity (Gouldner, 1960). According to this norm, there is a culturally defined tendency to value equitable relationships above inequitable ones. As a result, the results of empirical research might show a higher degree of reciprocity in response to questions on reciprocity than there is in actuality. The degree to which this occurs, however, might partly depend on the respondent's ability to accurately recall the answers to preceding questions on the receiving or providing of support. This recall might be more accurate if a question on receiving a specific aspect of support immediately precedes the question on giving that specific aspect of support, than if an entire set of questions on receiving support precedes a set of questions on giving support.

To find out whether an assimilation effect exists, the present paper examines differences in relationship reciprocity among those who answer pairs of support questions in comparison to those who answer blocks of support questions. The hypothesis to be tested is: The likelihood that a relationship is reciprocal will be greater if the pairs of questions on receiving and giving support immediately succeed each other in the interview than if an entire set of questions on receiving support precedes the entire set of reversed questions. Secondly, as an additional point of interest we will explore whether the sequence "giving-receiving" versus "receiving-giving" in the support questions makes a significant difference.

If and when the assimilation effect is observed, we will also examine

whether this method effect is significant as regards the association between the exchange orientation and the actual reciprocity. As has been noted above, a positive association can be anticipated between a high exchange orientation and the reciprocity of support given and received within the relationships (Clark, 1981; Clark *et al.*, 1987). The association observed under the blockwise condition is expected to be closer to the theoretically anticipated association and consequently to be positive and stronger than the association under the pairwise condition. This hypothesis is based on the idea that the assimilation effect disturbs the validity of the reciprocity scores under the pairwise condition.

The third research question is whether there is any reference effect causing the respondents to base the answers to questions on support within a specific relationship in part on the answers to the same question posed earlier pertaining to some other relationship. An effect of this kind can influence the extent of reciprocity that is measured.

Design of the study

Respondents

Data have been derived from a study among 179 men and women, aged 65 to 90 years ($\bar{x} = 71.4$, $SD = 5.2$), who were interviewed in the autumn of 1990 on the number, type, and importance of their relationships. Their names and addresses were obtained by taking a random sample from the Population Registers of the Municipality of Uithoorn. Uithoorn, with about 20,000 inhabitants, is a village near Amsterdam. The majority of the respondents were married (122, 68.2%), 3 were unmarried, 4 were divorced and 50 (27.9%) were widowed. Almost all were born in the Netherlands.

The response rate for the total sample was 48.2%; 3.5% could not be found (never home, wrong address, moved, died, etc.), 8.4% were not able to cooperate because of illness and 39.9% refused cooperation. The response was especially low among the oldest men and women (54.5% in the 65–70 category, 49.5% in the 71–75 category, 42.3% in the 76–80 category and 27.3% in the 81+ category).

Questionnaire in the face-to-face interview

The respondents were interviewed for an average of two hours with a questionnaire composed of open and prestructured questions. It included questions about demographic characteristics, living, working, and housing con-

ditions, social contacts, giving and receiving support, reciprocity, problematic situations, loneliness and family features. They were also asked to mention the names and addresses of their network members.

The interviews were conducted at the respondents' homes. The questionnaires were programmed with INTERV (De Pijper & Saris, 1986), installed on laptop computers. On the screen, the respondents were able to read everything that was written down during the entire interview. In response to a question posed at the beginning of the interview about whether they wanted to do so, 139 (77.7%) said they did. They could type in the answers to the questions in two parts of the interview themselves, and 8 respondents (4.5%) took the opportunity to do so.

Identification of relationships. A network of supportive relationships was identified by a two-step procedure. Respondents were first asked to mention the names or initials of persons with whom they shared their household, to mention their children (with a maximum of nine), family members they had regular contact with (with a maximum of three), neighbors they had regular contact with (with a maximum of two), other non-kin they had regular contact with (with a maximum of three), and their children's partners.

Questions were then asked about each of the persons, and about the respondent's relationship with them. Among these questions, two served as delineation questions in the second procedure step: the frequency of contact, and a single question about the received support "How supportive is the relationship with this person for you?" The product of the value of the two answers was computed, and the relationships were ranked on the basis of these scores. The best five relationships (i.e., with high frequency of contact and strong support) of the partial networks of household members and children, and the best five of the other partial networks (i.e., family, neighbors, other non-kin and children's partners) were selected for further questioning; if there were fewer than five relationships in one of the two sets of partial networks, one or more relationships from the other partial networks were added to get a total of ten.

Assessment of support. Eighteen questions were about the instrumental and emotional aspects of each relationship: nine about support received and nine about support given (see Appendix A). Four of the nine questions were about instrumental support (1 to 4) and five about emotional support (5 to 9). For obvious reasons, the questions about instrumental support were not asked about the members of their household and the questions about support received were not asked about relationships with network members with a score of 1 (no support) on the single question about support received used

as delineation question. Questions 1 and 3 to 9 could be ranked on unidimensional scales of instrumental, emotional and total support received (Loevinger's coefficient of homogeneity $H = 0.33, 0.59$ and 0.53 , reliability $0.51, 0.72$ and 0.76 , respectively) and given ($H = 0.43, 0.58$ and 0.52 , reliability $0.60, 0.72, 0.76$, respectively).

Assessment of reciprocity. A support exchange is defined as reciprocal if the frequency of support given is equal to the frequency of support received. If support is more frequently given than received, the other person within the relationship is overbenefited from the point of view of the respondent. If support is less frequently given than received, the other person is underbenefited from the point of view of the respondent. Reciprocity can be determined for a single relationship separately and for the network as a whole, for each support aspect, for instrumental and emotional support, and for total support.

Sequence of questions. The respondents were divided into four experimental groups. The assignment to one of the four groups was random, based on the time of day registered by the clock on the computer. In the first group ($N = 43$), a question asking how much support network members gave the respondent (receiver question) immediately preceded the reversed question asking how much of the same aspect of support the respondent gave to the network members (provider question). We refer to this group as "pairwise: receiving-giving". In the second group ($N = 39$), the total set of receiver questions preceded the provider questions. We refer to this group as "blockwise: receiving-giving". In the third group ($N = 47$), a question asking how much support the respondent gave to the network members immediately preceded the reversed question asking how much of the same aspect of support the respondent received from the network members. We refer to this group as "pairwise: giving-receiving". In the fourth group ($N = 49$), the total set of provider questions preceded the receiver questions. We refer to this group as "blockwise: giving-receiving".

Follow-up with mailed questionnaires

A follow-up was conducted in the spring of 1991. A random sample of 119 of the face-to-face interview respondents was asked to cooperate in a study of their social network. 86 respondents (72.3%) were willing to participate. However, 4 of them wanted to ask their network members' permission before they gave their addresses; they were omitted from the sample because the delay would decrease the comparability with the other respondents. The

remaining 82 respondents provided the names and addresses of 400 of their network members. Questionnaires were mailed to members of their households, their children, a selection of their other network members, and to the respondents themselves. 71 respondents (86.6%, $N = 82$) returned the questionnaire.

The questionnaire included questions about demographic characteristics, living and working conditions, giving and receiving support to and from all the other members of the delineated network, problematic situations, loneliness, exchange orientation, and family features.

Exchange orientation. Three items were used to assess the intensity of the exchange orientation (based on the scale of Clark *et al.*, 1987): "I do think people should feel obligated to repay others for favors", "I would feel exploited if someone failed to repay me for a favor", and "I do bother to keep track of benefits I have given others". The answers other than "strongly disagree" were put on a scale score (Loevinger's coefficient of homogeneity $H = 0.79$, reliability $\rho = 0.89$, theoretical range of the scale 0–3, $\bar{x} = 1.5$, $SD = 1.4$).

Procedure

First, the respondents were treated as units of analysis. For testing the overall assimilation effect, for each respondent the number of reciprocal exchanges (a certain aspect of support is given as frequently as received within a relationship) was counted. The average percentage of reciprocal exchanges was compared for the respondents in the "pairwise" versus the "blockwise" groups, using *t*-test analysis.

Second, the correlation between the exchange orientation score and the percentage of reciprocal exchanges was computed for the respondents of the "pairwise" group and the respondents of the "blockwise" group.

Third, the answers for each relationship and for each aspect of support were treated as a separate unit of analysis (14320 cases at a maximum: 8 aspects of support \times 10 relationships \times 179 respondents). Although it is obvious that the support within the (maximum of) ten relationships of one respondent has not been assessed independently, applying this procedure allowed us to summarize some of the findings across the relationships of one respondent. However, upgrading the number of cases in this way means that tests of significance must be handled with care.

For determining the assimilation effect together with the reference effect, the effect of the sequence "giving–receiving" versus "receiving–giving", and the effect of the instrumental and emotional content of the support, the

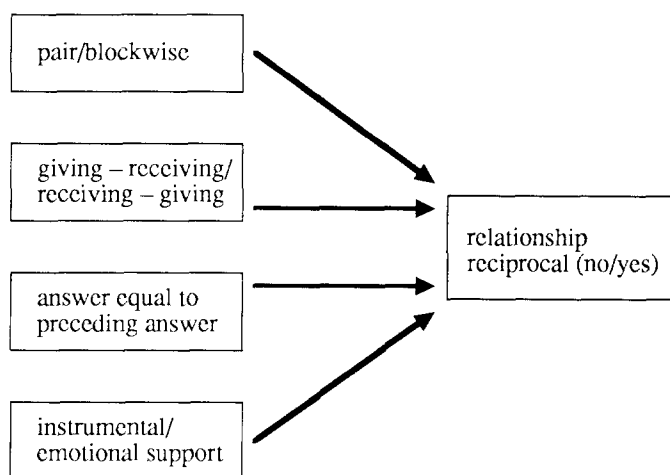


Fig. 1. The variables in the model tested by logit analysis.

model of Figure 1 was tested, using logit analysis. The dependent variable indicated whether the relationship was reciprocal or not, i.e., if the answer on the question to receiving support is equal to the answer on the question to giving support. The first independent variable was the experimental sequence of pairwise (value 0) versus blockwise questioning (value 1). The effect of this variable on the reciprocity of the relationship indicated the assimilation effect. The second independent variable was the experimental sequence of the provider and receiver questions. The sequence "giving-receiving" was coded as 0, the sequence "receiving-giving" as 1. The third independent variable "answer equal to answer on the preceding question" had the value 0 if the answer to a question about support within a certain relationship was different from the answer to the same question about support within the preceding relationship, and the value 1 if the answers were equal. The effect of this variable on reciprocity indicated the reference effect: the assumption is that the answer on the question to the support given pertaining household tasks (question 1) within the first relationship served as a reference for the answer on the question about the same support given within the second relationship; the second served as a reference for the third, and so on. Note that there is no reference for the first relationship (therefore, a maximum of 12888 cases remains for the analysis. Due to missing values, the number of cases is less). The fourth independent variable distinguish between the type of support: instrumental (value 0) and emotional (value 1).

Table 1. Mean percentage of reciprocal instrumental, emotional and total support exchanges across the relationships, per respondent broken down into two experimental conditions

		Pairwise	Blockwise	
Receiving-giving	<i>Instrumental</i>	60.0%	50.0%	$t_{(77)} = 1.9, p < 0.05$
	<i>Emotional</i>	68.7%	52.9%	$t_{(80)} = 4.1, p < 0.001$
	<i>Total</i>	66.2%	52.5%	$t_{(80)} = 3.7, p < 0.001$
		($N = 43$)	($N = 39$)	
Giving-receiving	<i>Instrumental</i>	59.1%	54.2%	$t_{(93)} = 0.9, p > 0.05$
	<i>Emotional</i>	65.6%	56.6%	$t_{(77.4)} = 2.2, p < 0.05$
	<i>Total</i>	63.8%	55.8%	$t_{(79.5)} = 2.2, p < 0.05$
		($N = 47$)	($N = 48$)	

Results

The 179 respondents mentioned an average of 12.3 relationships ($SD = 4.7$); 131 respondents mentioned 10 or more relationships. Data are available on giving and receiving support within 141 relationships with household members and 1396 relationships with others.

The majority of the exchanges was reciprocal (61.2%). The experimental groups differed in the number of reciprocal exchanges (Table 1). The exchanges in the relationships of the "pairwise" groups were more frequently reciprocal, compared to the exchanges of the respondents in the "blockwise" groups. The differences varied from 5% to 16%, and are smaller for instrumental than for emotional exchanges. The differences between "giving-receiving" and "receiving-giving" were not significant. All the differences between the "pairwise" and the "blockwise" groups, with the exception of the difference in the percentage of instrumental reciprocal exchanges between the "blockwise; giving-receiving" and the "blockwise; receiving-giving" group, were statistically significant.

The results do not refute the hypothesis: there was a method effect of an average of about 10% in the anticipated direction. More relationships are reciprocal if the pairs of questions on receiving and giving support immediately succeed each other in the interview than if an entire set of questions on receiving support precedes the entire set of reversed questions.

The correlations between exchange orientation and instrumental, emotional and total support reciprocity were -0.23 , 0.05 and -0.09 in the "pairwise" group ($N = 35$, for all $p > 0.05$), and 0.16 , 0.36 and 0.33 in the "blockwise" group ($N = 33$, $p > 0.05$, $p < 0.05$, $p < 0.05$). These results suggest that under different experimental conditions, different associations can be found between exchange orientation and support reciprocity. The positive associations found under the condition of "blockwise" questioning

were not contrary to our expectations, though the non significant negative or zero associations found under the condition of "pairwise" questioning were. It is striking that again, the method effect was the weakest for instrumental support reciprocity.

When they answered a question about the support given to or received from a certain person, the respondents were not only influenced by their earlier answer to the question on reversed support, but also by the answer they had just given to the same question pertaining to their relationship with a different person. The study of the reference effect was carried out with logit analyses on the 11150 answers for each relationship and for each aspect of support.

The reciprocity is not influenced by the sequence "giving-receiving" versus "receiving-giving" support: all the parameters of the direct and the interaction effects are not significant. These parameters were deleted from the model; the results of the test of the second model are the following. This model exhibit a reasonable fit ($N = 11150$, $\chi^2_{(8)} = 7.1$, $p = 0.53$). The "pairwise" versus "blockwise" questioning have a significant effect on reciprocity; the regression-like coefficient is -0.17 , indicating that more relationships are reciprocal if there is "pairwise" questioning (the difference is 10.1%). The estimate of the effect of "answer equal to the answer to the preceding question" is 0.37, indicating that congruence between the answer about the relationship in question with the answer about the preceding relationship contribute to reciprocity (a difference of 14.3%). The effect of the type of support is significant too: the parameter estimate of 0.20 indicates that more relationships are reciprocal for questions on emotional support, compared to questions on instrumental support (a difference of 4.8%). The interaction effect of "pairwise/blockwise" and "instrumental/emotional" is significant (the estimate is 0.13): under the condition of pairwise questioning more reciprocal relationships were found in answer on emotional support questions (a difference of 10.2%) and under the condition of blockwise questioning the number of reciprocal relationships found is about equal for instrumental and emotional support questions. The interaction effect of "answer equal/different from preceding answer" and "instrumental/emotional" is significant (the estimate is 0.13): when an answer differ from the preceding answer more reciprocal relationships were found in answer on emotional support questions than in answer on instrumental support questions (a difference of 16.3%), while there is only a slight difference (3.3%) when the answer is equal to the preceding question. The other interaction effects are not significant.

Discussion

Very little systematic research has been conducted into method effects in the measurement of reciprocity. The study described above focused on one aspect, i.e. two sequence effects on questions about giving and receiving support. Based on the results of this study, it is recommended that the assimilation effect be reduced by presenting questions about giving and receiving support in a "blockwise" rather than a "pairwise" fashion, and by putting questions about some other topic in between.

The method effects were found to occur to a greater extent with respect to questions about emotional support than questions about instrumental support. The reason for this might be that although the questions referred to actual exchanges of support, the data pertaining to emotional support have a more variable standard against which the level of supportiveness is assessed than those pertaining to instrumental support. The fact that the respondents were more apt to give an answer to a support question that was equal to the answer to the preceding question arouses some doubts as to the validity of the data. We expect that the assimilation and the reference effect will be stronger when the questions are asked for each relationship separately, based on the following scheme: "Have you helped [*name network member 1*] with household chores in the past few months?", "Has [*name network member 1*] helped you with household chores in the last few months?", followed by the questions for network member 2: "Have you helped [*name network member 2*] . . .", "Has [*name network member 2*] helped you . . .", and so on for the other network members. One aspect that has not yet been examined is whether the method effects are stronger with respect to certain types of relationships (e.g., exchange relationships) than with respect to other types. Further research is called for in connection with these points.

Other methodological problems, for example concerning the veridicality of the data collected from the two participants in a relationship (Antonucci & Israel, 1986; Hahn *et al.*, 1984), concerning the difference between global and aggregated indices of support and reciprocity (Van Tilburg, 1987; Van Yperen, 1990), and concerning the several ways reciprocity scores can be assessed on the basis of relationship and support specific indices (Van Tilburg *et al.*, 1991), have been distinguished, but have not yet been satisfactorily solved. In the course of the project described here, the nature and the extent of problems such as these are to be further examined.

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Appendix A. Assessment of support*Giving support*

1. How often during the past year did it occur that you helped the following persons with daily household tasks (e.g., preparing meals, cleaning the house, transport, a chore)?
2. How often during the past year did it occur that you looked after the children, pets, plants or house of the following persons?
3. How often during the past year did it occur that you gave the following persons advice (e.g., on an important decision or on filling out forms)?
4. How often during the past year did it occur that you gave the following persons help when they needed it, e.g., when they were ill?
5. How often during the past year did it occur that you gave the following persons a present?
6. How often during the past year did it occur that you showed the following persons you cared for them?
7. How often during the past year did it occur that the following persons came to you in tears?
8. How often during the past year did it occur that you gave the following persons a kiss or a hug?
9. How often during the past year did it occur that the following persons told you about their personal feelings?

Receiving support

1. How often during the past year did it occur that the following persons helped you with daily household tasks (e.g., preparing meals, cleaning the house, transport, a chore)?
2. How often during the past year did it occur that the following persons looked after your pets, plants or house?
3. How often during the past year did it occur that the following persons gave you advice (e.g., on an important decision or on filling out forms)?
4. How often during the past year did it occur that the following persons gave you help when you needed it, e.g., when you were ill?
5. How often during the past year did it occur that the following persons gave you a present?
6. How often during the past year did it occur that the following persons showed you they cared for you?
7. How often during the past year did it occur that you went in tears to the following persons?
8. How often during the past year did it occur that the following persons gave you a kiss or a hug?
9. How often during the past year did it occur that you told the following persons about your personal feelings?

Choice of answers

never this year; about once; two or three times this year; monthly or every two months; two or three times a month; weekly; daily

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